

Fig. 1

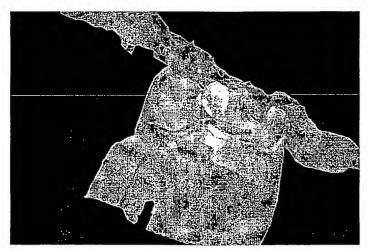


Fig. 2

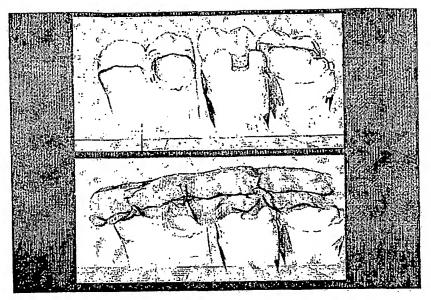
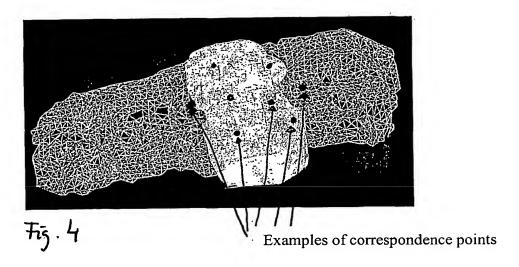


Fig. 3



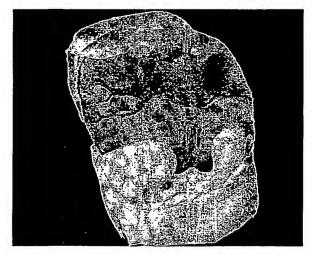


Fig. 5

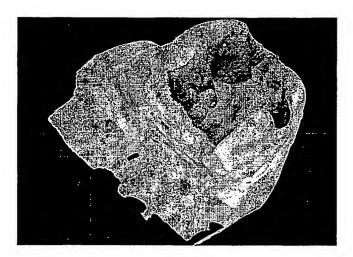
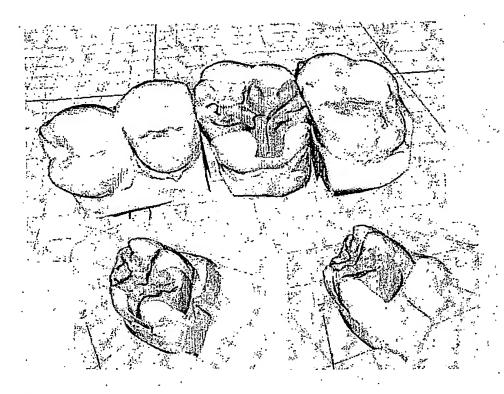
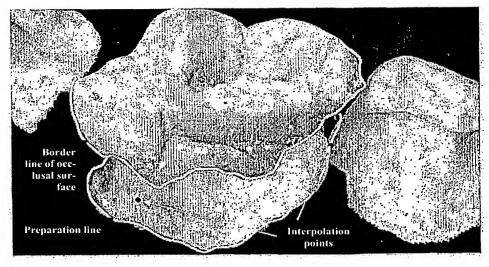


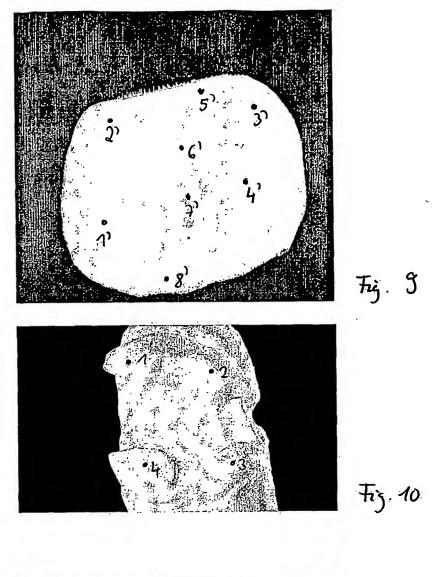
Fig. 6

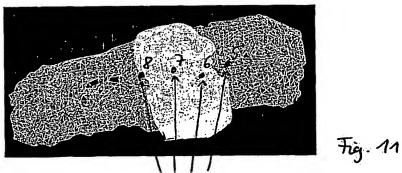


Fg.7



Tig. 8





Examples of points of contact with antagonists

6/n

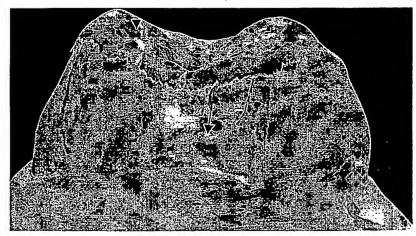


Fig. 12

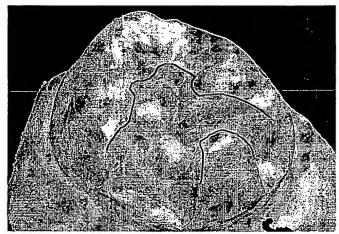
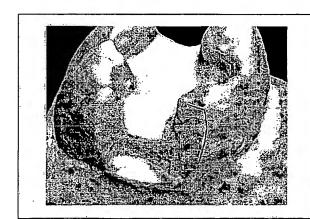
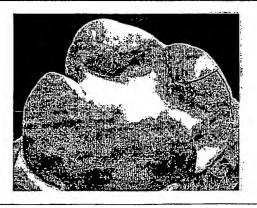


Fig. 13





Frig. 14

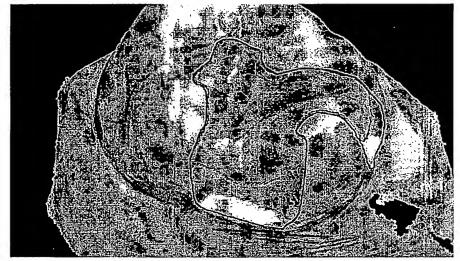


Fig. 15

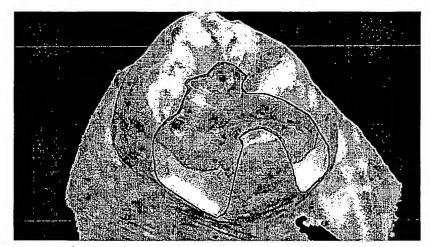


Fig. 16



Fig. 17

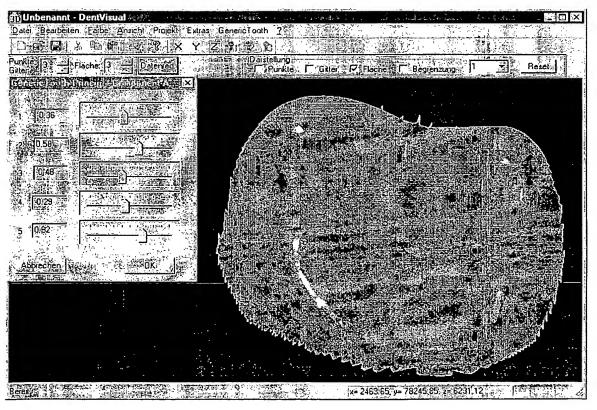


Fig. 18

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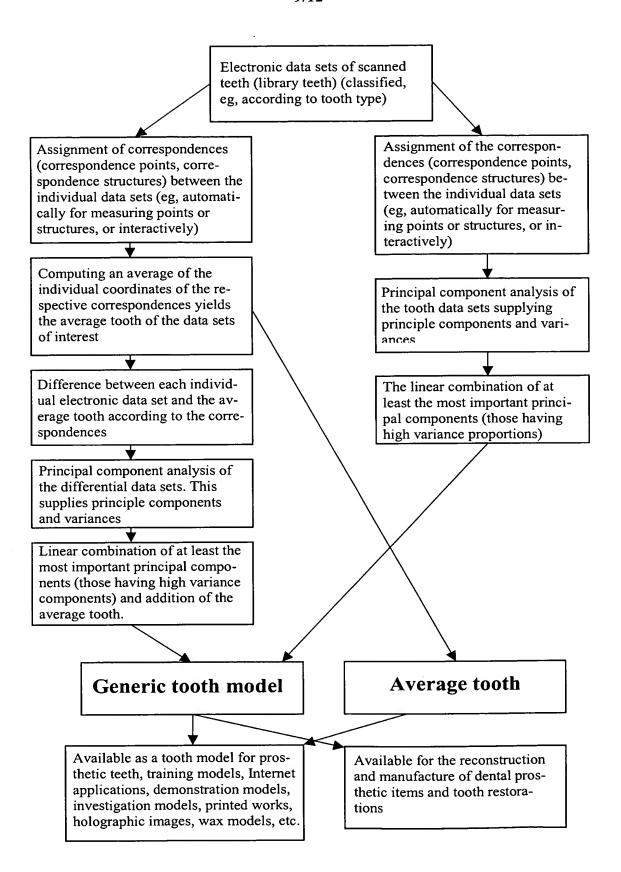


Fig. 19

Reconstruction of the shell

Three-dimensional scanning of the preparation or of the defective dental prosthetic item. Electronic data sets of the preparation or defective dental prosthetic item. If appropriate, inclusion of If appropriate, inclusion of scanned data sets of the opposing scanned data sets of the adjacent jaw (antagonists), eg, in the form tooth/teeth of occlusal/static bite registration, functional bite registration, or opposing jaw model Determination of the correspondence points or structures using the generic tooth model, the average tooth, or the library teeth. Interactive online determination of correspondences during the reconstruction process by selecting points/structures in the depicted electronic images of scanning and average tooth or generic tooth model Automatic correspondence as-Selection of those correspondence signment, eg, using an optical points/structures that have already flow or process of matching been laid down for the generic remaining tooth structure to the tooth model, the average tooth, or average tooth, generic tooth the library teeth. model, or library teeth Average tooth or Generic tooth model **Tooth library** model tooth Starting point for the reconstruction of defective teeth or defective dental prosthetic items, for creating dental prosthetic items or tooth restorations

Reconstruction of the shell

Average tooth or model tooth **Tooth library** Generic tooth model Optimal assignment of cor-Optimal assignment of corre-Optimal assignment of correspondence points/structures by spondence points/structures respondence points/structures between selecting the most suitable between scanned data sets and tooth from the library the generic tooth model scanned data sets and the average tooth Determination of rotation, Determination of linear factors Determination of linear factors for the principal components translation, and/or scaling for the principal components used for the generic tooth parameters or parameters of that are used for the generic model such that probability for an affine transformation by tooth model such that an error the newly formed tooth is minimizing an error funcfunction (eg, distance function) maximized, (the parameters of tion. is minimized (the parameters translation, rotation, scaling, of translation, rotation, scaling and/or generally affine transand, generally, affine transformations can be included in formations can be included in the minimization) the minimization). If appropriate, adjustment of the measured data set by deformation, morphing, etc, in the areas in which irregularities or problematic zones are located (contact points not in correct position, penetration of the functional or static bite registration, transition to the preparation limit, smooth adjustment to the remaining tooth structure, removal in accordance with the defect, insufficient layer thickness, etc.) Build-up of any missing exterior surface parts (eg, by smooth joining of spline, Bezier, or NURBS surfaces, etc). Through the use of control points, these surfaces can be shaped more precisely Data set of the reconstructed shell for the defective tooth and/or the defective dental prosthetic item

Fig. 21

Production of a dental prosthetic item or a tooth restoration

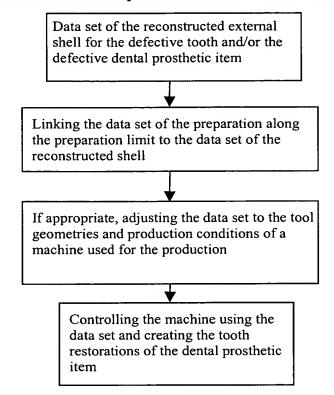


Fig. 22

Creating a tooth model

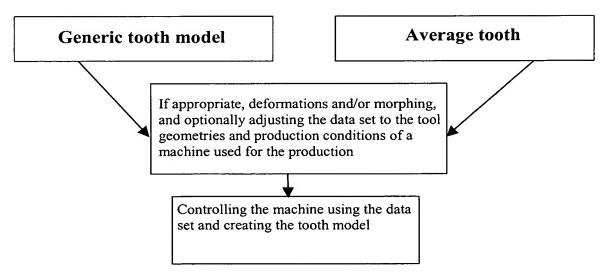


Fig. 23